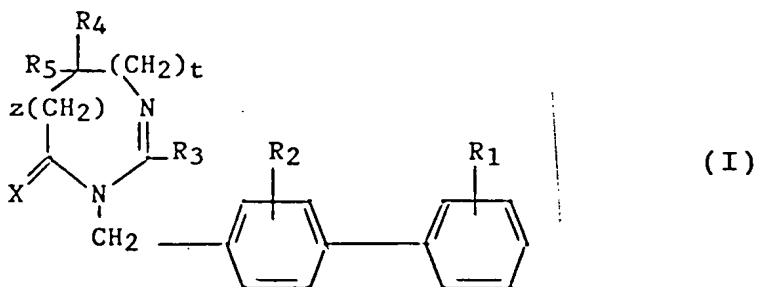


CM

WHAT IS CLAIMED IS:

1. A compound of the formula



in which:

$\bar{R}_1$  and  $\bar{R}_2$  are similar or different and are each independently hydrogen or a group selected from a  $C_1$ - $C_6$  alkyl, a  $C_1$ - $C_4$  alkoxy, an amino, an aminomethyl, a carboxyl, an alkoxycarbonyl in which the alkoxy is  $C_1$ - $C_4$ , a cyano, a tetrazolyl, a methyltetrazolyl, a methylsulfonylamino, a trifluoromethylsulfonylamino, a trifluoromethylsulfonylaminomethyl, an N-cyanoacetamide, an N-hydroxyacetamide, an N-(4-carboxy-1,3-thiazol-2-yl)acetamide, a ureido, a 2-cyanoguanidinocarbonyl, a 2-cyanoguanidinomethyl, an imidazol-1-ylcarbonyl and a 3-cyano-2-methylisothio-ureidomethyl, with the proviso that at least one of the substituents  $\bar{R}_1$  or  $\bar{R}_2$  is other than hydrogen;

$\bar{R}_3$  is a hydrogen, a  $C_1$ - $C_6$  alkyl which is unsubstituted or substituted by one or more halogen atoms, a  $C_2$ - $C_6$  alkenyl, a  $C_3$ - $C_7$  cycloalkyl, a phenyl, a phenylalkyl in which the alkyl is  $C_1$ - $C_3$ , or a phenylalkenyl in which the alkenyl is  $C_2$ - $C_3$ , said phenyl groups being unsubstituted or monosubstituted or polysubstituted by a halogen atom, a  $C_1$ - $C_4$  alkyl, a  $C_1$ - $C_4$  halogenoalkyl, a  $C_1$ - $C_4$  polyhalogenoalkyl, a hydroxyl or a  $C_1$ - $C_4$  alkoxy; and

T1010x

PS  
P<sub>1</sub>, H<sub>14</sub>, L

H<sub>14</sub>

P<sub>1</sub>, H<sub>14</sub>, L

H<sub>14</sub>

L

H<sub>14</sub>

L

101

either

- $R_4$  and  $R_5$  are each independently a  $C_1-C_6$  alkyl, a phenyl or a phenylalkyl in which the alkyl is  $C_1-C_3$ , said alkyl, phenyl and phenylalkyl groups being unsubstituted or substituted by one or more halogen atoms or by a group selected from a  $C_1-C_4$  perfluoroalkyl, a hydroxyl and a  $C_1-C_4$  alkoxy;
- or  $R_4$  and  $R_5$  together form a group of the formula  $=CR_7R_8$ , in which  $R_7$  is hydrogen, a  $C_1-C_4$  alkyl or a phenyl and  $R_8$  is a  $C_1-C_4$  alkyl or a phenyl;
- or else  $R_4$  and  $R_5$  together are either a group of the formula  $(CH_2)_n$  or a group of the formula  $(CH_2)_pY-(CH_2)_q$ , in which Y is either an oxygen atom, or a sulfur atom, or a carbon atom substituted by a  $C_1-C_4$  alkyl group, a phenyl or a phenylalkyl in which the alkyl is  $C_1-C_3$ , or a group  $N-R_6$ , in which  $R_6$  is a hydrogen, a  $C_1-C_4$  alkyl, a phenylalkyl in which the alkyl is  $C_1-C_3$ , a  $C_1-C_4$  alkylcarbonyl, a  $C_1-C_4$  halogenoalkylcarbonyl, a  $C_1-C_4$  polyhalogenoalkylcarbonyl, a benzoyl, an alpha-aminoacyl or an N-protecting group, or  $R_4$  and  $R_5$ , together with the carbon atom to which they are bonded, form an indane or an adamantane;
- $p + q = m$ ;
- $n$  is an integer between 2 and 11; and
- $m$  is an integer between 2 and 5;
- or
- $R_4$  is a  $C_1-C_6$  alkyl which is unsubstituted or substituted by one or more halogen atoms; and
- $R_5$  is a cycloalkyl or a cycloalkylmethyl, the cycloalkyl being  $C_3-C_7$ , which is unsubstituted or substituted by one or more halogen atoms;
- or  $R_4$  and  $R_5$  are each a cyclopropyl;
- X is an oxygen atom or sulfur atom; and
- z and t are zero or one is zero and the other is one;

and its salts.

2. A compound according to claim 1 wherein  $R_1$  is in the ortho position and is a carboxyl or tetrazolyl group and  $R_2$  is hydrogen.

3. A compound according to claim 1 ~~or claim 2~~ wherein  $R_4$  and  $R_5$  form a cyclopentane or a cyclohexane with the carbon to which they are bonded.

4. A compound according to claim 1 ~~or claim 2~~ wherein  $R_4$  is methyl and  $R_5$  is cyclohexyl.

5. A compound according to <sup>claim 1</sup> ~~any one of claims 1 to 4~~ wherein  $R_3$  is a linear  $C_1$ - $C_6$  alkyl group.

6. A compound according to <sup>claim 1</sup> ~~any one of claims 1 to 5~~ wherein X is oxygen.

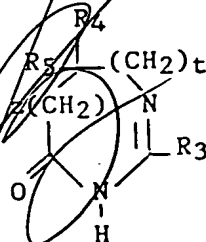
7. A compound according to <sup>claim 1</sup> ~~any one of claims 1 to 6~~ wherein  $z = t = 0$ .

8. A compound according to claim 1 which is 2-n-butyl-4-spirocyclopentane-1-[(2'-(tetrazol-5-yl)biphenyl-4-yl)methyl]-2-imidazolin-5-one or one of its salts with acids or bases.

9. A compound according to claim 1 which is 2-n-butyl-4-methyl-4-cyclohexyl-1-[(2'-(tetrazol-5-yl)biphenyl-4-yl)methyl]-2-imidazolin-5-one or one of its salts with acids or bases.

10. A method of preparing a compound (I) according to <sup>claim 1</sup> ~~any one of claims 1 to 9~~, wherein:

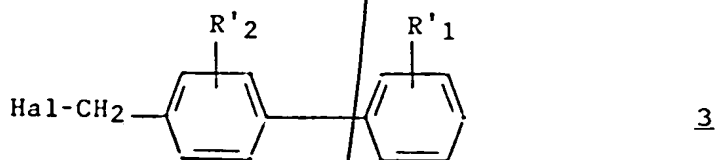
a) a heterocyclic derivative of the formula



2

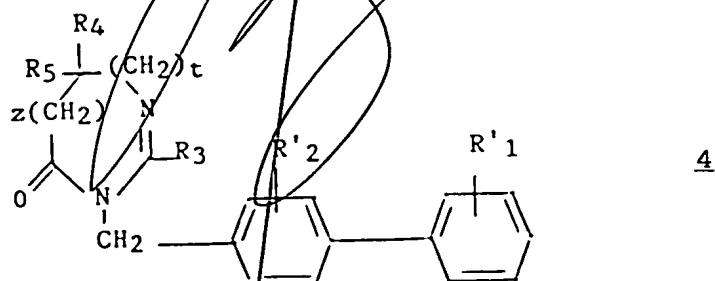
in which  $z$ ,  $t$ ,  $R_3$ ,  $R_4$  and  $R_5$  are as defined for (I) in

claim 1, is reacted with a (biphenyl-4-yl)methyl derivative of the formula



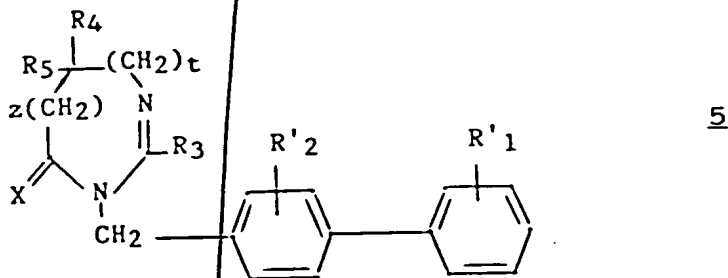
in which Hal is a halogen atom and R'<sub>1</sub> and R'<sub>2</sub> are respectively either R<sub>1</sub> and R<sub>2</sub> or a precursor group of R<sub>1</sub> and R<sub>2</sub>;

b1) if appropriate, the resulting compound of the formula



is treated with Lawesson's reagent [2,4-bis(4-methoxyphenyl)-1,3-dithia-2,4-diphosphetane 2,4-disulfide]; and

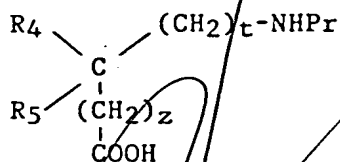
c1) the compound obtained in a1) or b1), of the formula



in which X is an oxygen atom or a sulfur atom, is treated to give the compound (I) by conversion of the groups  $R'_1$  and/or  $R'_2$  to the groups  $R_1$  and/or  $R_2$  respectively.

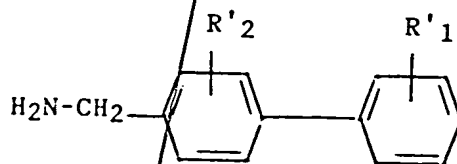
11. A method of preparing a compound (I) according to claim 1 ~~any one of claims 1 to 9~~, wherein:

a2) an amino acid of the formula



7

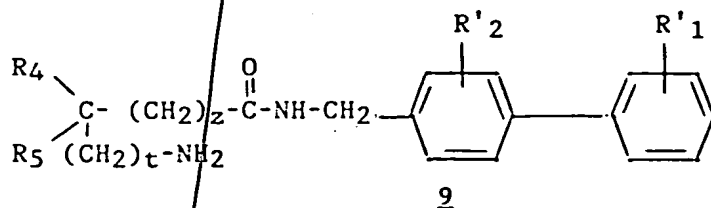
in which  $z$ ,  $t$ ,  $R_4$  and  $R_5$  are as defined for (I) in claim 1, and of which the amine group is protected by the Pr group, is reacted with a (biphenyl-4-yl)methyl-amine derivative of the formula



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in which  $R'_1$  and  $R'_2$  are respectively either  $R_1$  and  $R_2$  or a precursor group of  $R_1$  and  $R_2$ ;

b2) after deprotection of the amine, the resulting compound of the formula

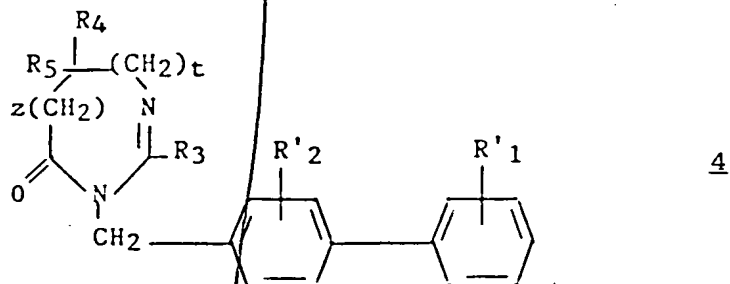


9

is then treated with an alkyl ortho-ester of the formula  $R_3C(OR)_3$  (10), in which  $R_3$  is as defined for

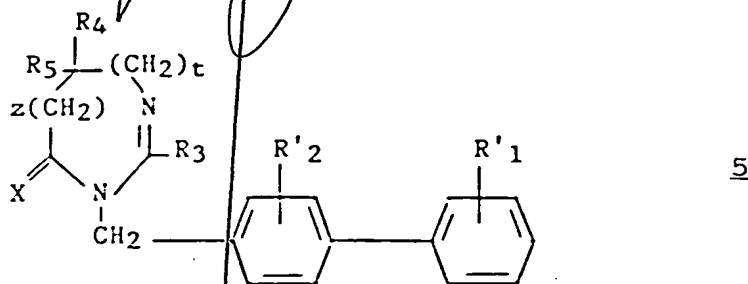
(I) in claim 1 and R is a C<sub>1</sub>-C<sub>4</sub> alkyl;

c2) if appropriate, the resulting compound of the formula



is treated with Lawesson's reagent [2,4-bis(4-methoxy-phenyl)-1,3-dithia-2,4-diphosphetane-2,4-disulfide]; and

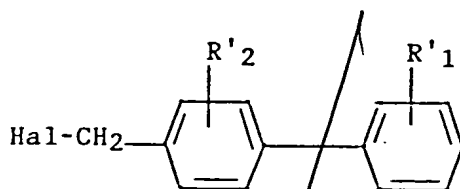
d2) the compound thus obtained in b2 or c2, of the formula



is then treated under suitable conditions for preparing the compound (I) by conversion of the groups R'<sub>2</sub> and/or R'<sub>1</sub> to the groups R<sub>2</sub> and/or R<sub>1</sub> respectively.

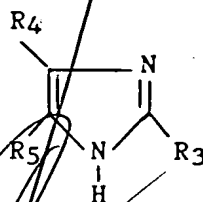
12. A method of preparing a compound (I) according to claim 7 in which R<sub>5</sub> is other than a cycloalkyl or a cycloalkylmethyl wherein the cycloalkyl is a C<sub>3</sub>-C<sub>7</sub> cycloalkyl, wherein:

a3) a (biphenyl-4-yl)methyl derivative of the formula



3

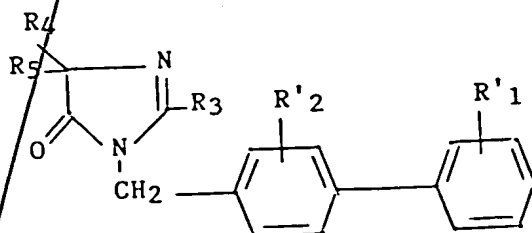
in which Hal is a halogen atom and R'<sub>1</sub> and R'<sub>2</sub> are respectively either R<sub>1</sub> and R<sub>2</sub> or a precursor group of R<sub>1</sub> and R<sub>2</sub>, is reacted with an imidazole derivative of the formula



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in which R<sub>3</sub>, R<sub>4</sub> and R<sub>5</sub> are as defined for (I) in claim 1, in the presence of oxygen and UV irradiation and in a basic medium;

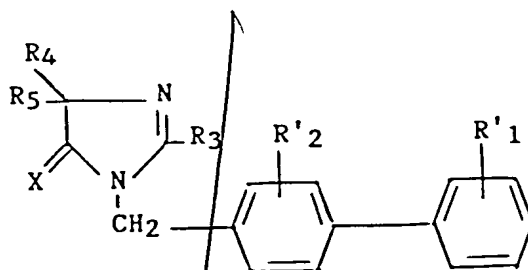
b3) if appropriate, the resulting compound of the formula



4'

is treated with Lawesson's reagent [2,4-bis(4-methoxyphenyl)-1,3-dithia-2,4-diphosphetane 2,4-disulfide]; and

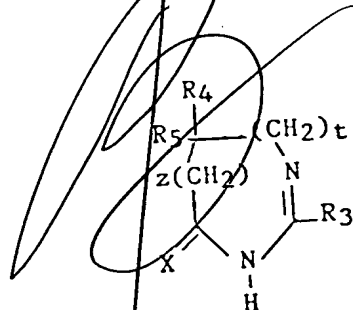
c3) the compound thus obtained in b3 or c3, of the formula



5'

is then treated under suitable conditions for preparing the compound (I) by conversion of the groups R'<sub>1</sub> and/or R'<sub>2</sub> to the groups R<sub>1</sub> and/or R<sub>2</sub> respectively.

13. A compound of the formula



(II)

in which:

- R<sub>3</sub> is a hydrogen, a C<sub>1</sub>-C<sub>6</sub> alkyl which is unsubstituted or substituted by one or more halogen atoms, a C<sub>2</sub>-C<sub>6</sub> alkenyl, a C<sub>3</sub>-C<sub>7</sub> cycloalkyl, a phenyl, a phenylalkyl in which the alkyl is C<sub>1</sub>-C<sub>3</sub>, or a phenylalkenyl in which the alkenyl is C<sub>2</sub>-C<sub>3</sub>, said phenyl groups being unsubstituted or monosubstituted or polysubstituted by a halogen atom, a C<sub>1</sub>-C<sub>4</sub> alkyl, a C<sub>1</sub>-C<sub>4</sub> halogenoalkyl, a C<sub>1</sub>-C<sub>4</sub> polyhalogenoalkyl, a hydroxyl or a C<sub>1</sub>-C<sub>4</sub> alkoxy; and either
- R<sub>4</sub> and R<sub>5</sub> are each independently a C<sub>1</sub>-C<sub>6</sub> alkyl, a phenyl or a phenylalkyl in which the alkyl is C<sub>1</sub>-C<sub>3</sub>, said alkyl, phenyl and phenylalkyl groups being unsubstituted or substituted by one or more halogen atoms or by a group selected from a C<sub>1</sub>-C<sub>4</sub> perfluoro-

- alkyl, a hydroxyl and a  $C_1-C_4$  alkoxy;
- or  $R_4$  and  $R_5$  together form a group of the formula  $=CR_7R_8$ , in which  $R_7$  is hydrogen, a  $C_1-C_4$  alkyl or a phenyl and  $R_8$  is a  $C_1-C_4$  alkyl or a phenyl;
  - or else  $R_4$  and  $R_5$  together are either a group of the formula  $(CH_2)_n$  or a group of the formula  $(CH_2)_pY-(CH_2)_q$ , in which  $Y$  is either an oxygen atom, or a sulfur atom, or a carbon atom substituted by a  $C_1-C_4$  alkyl group, a phenyl or a phenylalkyl in which the alkyl is  $C_1-C_3$ , or a group  $N-R_6$ , in which  $R_6$  is a hydrogen, a  $C_1-C_4$  alkyl, a phenylalkyl in which the alkyl is  $C_1-C_3$ , a  $C_1-C_4$  alkylcarbonyl, a  $C_1-C_4$  halogenoalkylcarbonyl, a  $C_1-C_4$  polyhalogenoalkylcarbonyl, a benzoyl, an alpha-aminoacyl or an N-protecting group, or  $R_4$  and  $R_5$  together with the carbon atom to which they are bonded form an indane or an adamantane;
  - $p + q = m$ ;
  - $n$  is an integer between 2 and 11;
  - $m$  is an integer between 2 and 5;
  - $X$  is an oxygen atom or sulfur atom; and
  - $z$  and  $t$  are zero or one is zero and the other is one; with the limitation that
    - if  $z$  and  $t$  are zero and  $X$  is an oxygen atom,  $R_4$  and  $R_5$  are other than
      - a  $C_1-C_6$  alkyl, a phenyl or a phenylalkyl in which the alkyl is  $C_1-C_3$ , said alkyl, phenyl and phenylalkyl groups being unsubstituted or substituted by one or more halogen atoms or by a group selected from a  $C_1-C_4$  perfluoroalkyl, a hydroxyl and a  $C_1-C_4$  alkoxy;
      - or  $R_4$  and  $R_5$  together are other than a group  $N-R_6$  in which  $R_6$  is a hydrogen, a  $C_1-C_4$  alkyl or a phenylalkyl in which the alkyl is  $C_1-C_3$ ; and
      - $n$  is other than 6; or
- when  $R_3$  represents a substituted phenyl group,  $R_4$  and  $R_5$  together are other than a  $(CH_2)_n$  group in which  $n$  is between 3 and 5;

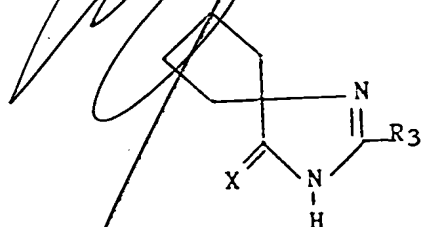
and

- if  $z = 1$  and  $R_3$  is a phenyl,  $R_4$  and  $R_5$  are each other than a methyl;

or

- $R_4$  is a  $C_1-C_6$  alkyl which is unsubstituted or substituted by one or more halogen atoms; and
- $R_5$  is a cycloalkyl or a cycloalkylmethyl, said cycloalkyl being  $C_3-C_7$ , which is unsubstituted or substituted by one or more halogen atoms;
- or  $R_4$  and  $R_5$  are each a cyclopropyl;
- X is an oxygen atom or sulfur atom; and
- z and t are zero or one is zero and the other is one.

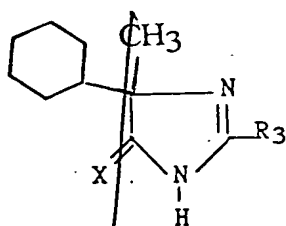
14. A compound according to claim 13 of the formula



(II')

in which X is an oxygen atom or a sulfur atom and  $R_3$  is a hydrogen, a  $C_1-C_6$  alkyl which is unsubstituted or substituted by one or more halogen atoms, a  $C_2-C_6$  alkenyl, a  $C_3-C_7$  cycloalkyl, a phenyl, a phenylalkyl in which the alkyl is  $C_1-C_3$ , or a phenylalkenyl in which the alkenyl is  $C_2-C_3$ , said phenyl groups being unsubstituted or monosubstituted or polysubstituted by a halogen atom, a  $C_1-C_4$  alkyl, a  $C_1-C_4$  halogenoalkyl, a  $C_1-C_4$  polyhalogenoalkyl, a hydroxyl or a  $C_1-C_4$  alkoxy; with the proviso that  $R_3$  is other than a substituted phenyl group when X is oxygen.

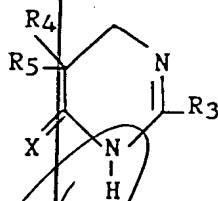
15. A compound according to claim 13 of the formula



(II')

in which X and  $R_3$  are as defined for (II) in claim 13.

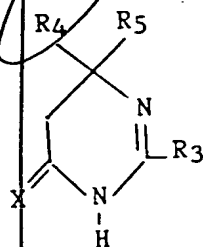
16. A compound according to claim 13 of the formula



(II'')

in which  $R_3$ ,  $R_4$ ,  $R_5$  and X are as defined above for (II) in claim 13.

17. A compound according to claim 13 of the formula



(II''')

in which X,  $R_3$ ,  $R_4$  and  $R_5$  are as defined for (II) in claim 13.

18. A method of preparing a compound according to <sup>claim 13</sup> ~~any~~ ~~one of claims 13 to 17~~, which comprises reacting a compound of the formula

$R_3-B$

14

in which  $R_3$  is as defined above for (II) in <sup>claim 13</sup> ~~claims 13 to 16~~,

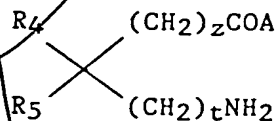
~~and B is~~

- a group  $C(OR)_3$

- a group  $\begin{array}{c} \text{NH} \\ \parallel \\ \text{C} \\ \diagup \quad \diagdown \\ \text{OR} \end{array}$  or

- a group  $COHal$

R being a  $C_1-C_4$  alkyl and Hal denoting a halogen atom, preferably chlorine, with a compound of the formula



13

in which  $R_4$  and  $R_5$  are as defined above for (II) in claim 13 and A is an OH group, an  $NH_2$  group or a group  $OR'$ ,  $R'$  being hydrogen or a  $C_1-C_4$  alkyl, and then, if appropriate, treating the resulting compound with Lawesson's reagent (2,4-bis(4-methoxyphenyl)-1,3-dithia-2,4-diphosphetane disulfide).

*a* 10. A pharmaceutical composition in which a compound according to *claim 1* ~~any one of claims 1 to 9~~ is present as the active principle.

*a B* 11. A pharmaceutical composition in which <sup>0.1 to 1000 mg of</sup> a compound according to *claim 1* ~~any one of claims 1 to 9~~ is present in association with a beta-blocking compound.

*a B* 12. A pharmaceutical composition in which <sup>0.1 to 1000 mg of</sup> a compound according to *claim 1* ~~any one of claims 1 to 9~~ is present in association with a diuretic.

*a B* 13. A pharmaceutical composition in which <sup>0.1 to 1000 mg of</sup> a compound according to *claim 1* ~~any one of claims 1 to 9~~ is present in association with a non-steroidal antiinflammatory.

*a B* 14. A pharmaceutical composition in which <sup>0.1 to 1000 mg of</sup> a compound according to *claim 1* ~~any one of claims 1 to 9~~ is present in association with a calcium antagonist.

*B* 15. A pharmaceutical composition in which <sup>0.1 to 1000 mg of</sup> a compound

a according to <sup>claim 1</sup> ~~any one of claims 1 to 9~~ is present in association with a tranquilizer.

END